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National Eutrophication Survey, Corvallis, Oregon

Prepared for

Environmental Monitoring and Support Laboratory, Las Vegas, Nevada

Sep 76

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NATIONAL EUTROPHICATION SURVEY

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16. ABSTRACT

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

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REPORT

ON

CLARK HILL RESERVOIR

COLUMBIA, ELBERT, LINCOLN, McDUFFIE, AND WILKS COUNTIES, GEORGIA

AND

ABBEVILLE AND McCORMICK COUNTIES, SOUTH CAROLINA

EPA REGION IV

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AND THE

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SEPTEMBER, 1976

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's freshwater lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the South Carolina Department of Health and Environmental Control for professional involvement, to the South Carolina National Guard for conducting the tributary sampling phase of the Survey, and to those South Carolina wastewater treatment plant operators who voluntarily provided effluent samples and flow data.

The staff of the South Carolina Bureau of Wastewater and Stream Quality Control provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

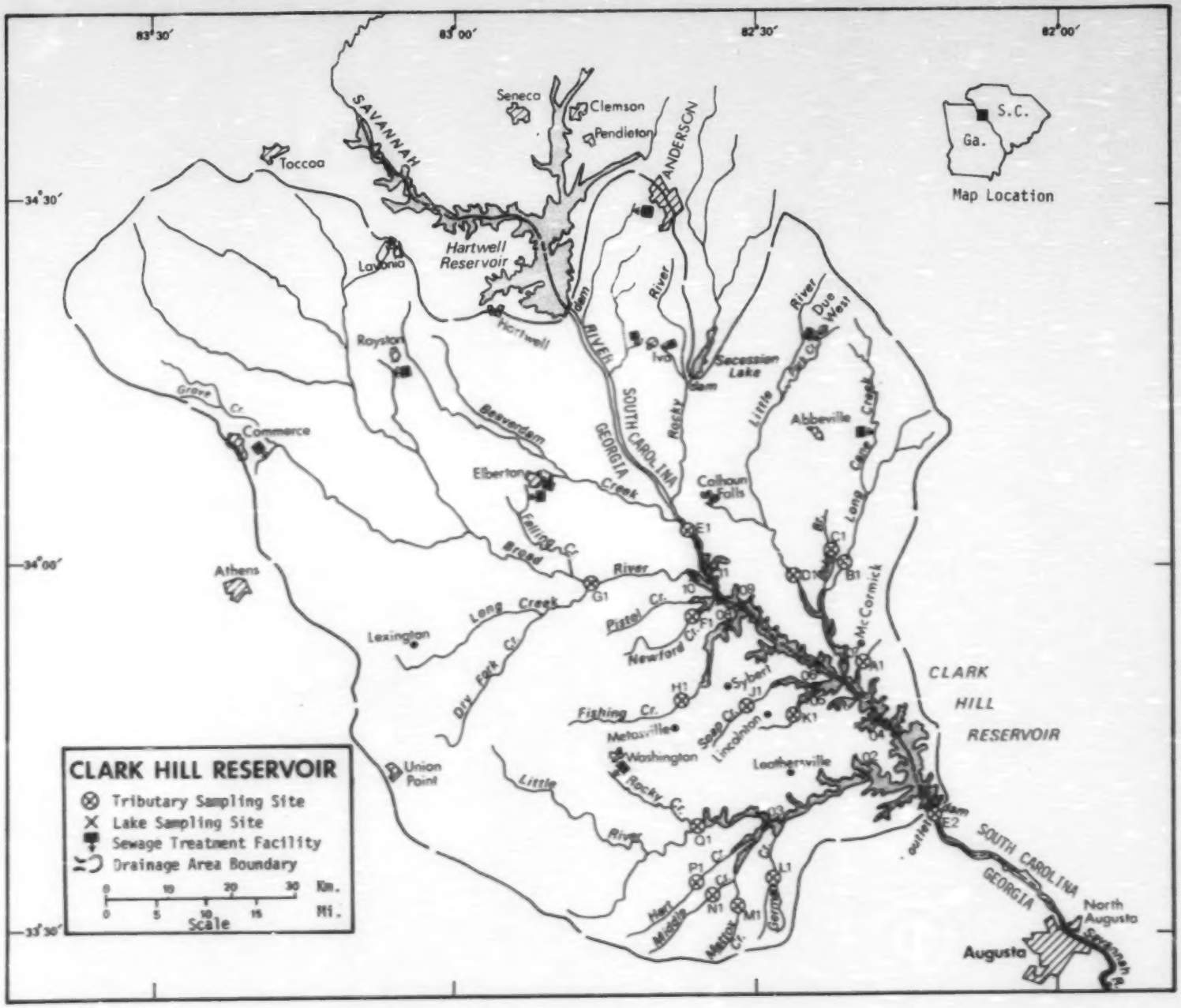
Major General Robert L. McCrady, the Adjutant General of South Carolina, and Project Officer Lt. Colonel John P. DuPre (Retired), who directed the volunteer efforts of the South Carolina National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF SOUTH CAROLINA

NAME	COUNTY
Clark Hill	Abbeville, McCormick, SC; Columbia, Elbert, Lincoln, McDuffie, Wilks, GA
Fishing Creek	Chester, Lancaster
Greenwood	Greenwood, Laurens, Newberry
Hartwell	Anderson, Oconee, Pickens, SC; Franklin, Hart, Stephens, GA
Keowee	Oconee, Pickens
Marion	Berkeley, Calhoun, Claredon, Orangeburg, Sumter
Moultrie	Berkeley
Murray	Lexington, Newberry, Richland, Saluda
Robinson	Chesterfield, Darlington
Saluda	Greenville, Pickens
Secession	Abbeville, Anderson
Wateree	Fairfield, Kershaw, Lancaster
William C. Bowen	Spartanburg
Wylie	York, SC; Gaston, Mecklenburg, NC



CLARK HILL RESERVOIR
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Drainage Area Boundary
Scale
Km.
Mi.
Map Location
S.C.
Ga.
83°30′
83°00′
82°30′
82°00′
34°30′
34°00′
33°30′
SAVANNAH
RIVER
SOUTH CAROLINA
GEORGIA
ANDERSON
Seneca
Clemson
Pendleton
Toccoa
Lavonia
Hartwell Reservoir
Hartwell
Royston
Commerce
Grove Cr.
Beaverdam
Elberton
Creek
Falling Cr.
Broad
River
Athens
Lexington
Long Creek
Dry Fork Cr.
Union Point
Little
River
Rocky Cr.
Fishing Cr.
Metasville
Washington
Pistol Cr.
Newford Cr.
Sybert
Snap Cr.
Lincolnton
Leathersville
Rocky
River
Iva
Secession Lake
Dam
Calhoun Falls
Abbeville
Little
River
Due West
Long Cane Creek
McCormick
CLARK
HILL
RESERVOIR
Outlet
Dam
North Augusta
Augusta
Savannah R.
Hart Cr.
Middle Cr.
Mattox Cr.
Germany Cr.

CLARK HILL RESERVOIR

STORET NO. 1304

I. CONCLUSIONS

A. Trophic Condition:

The overall Survey data indicate Clark Hill Reservoir is meso-eutrophic. However, the reservoir is quite large; and when the data are examined on a station-by-station basis, meso-trophy is indicated at stations 1 and 2; meso-eutrophy is indicated at stations 4, 5, 6, and 9; and eutrophy is indicated at stations 3, 7, 8, 10, and 11 (see map, page v). Following is a tabulation of the means of four relevant parameters for each of the sampling stations:

Station	TP (mg/l)	TN (mg/l)	Chlor. a (µg/l)	Secchi disc (m.)
1	0.021	0.451	4.8	2.5
2	0.022	0.397	4.5	1.9
4	0.021	0.352	7.0	1.4
5	0.025	0.649	7.5	1.5
6	0.022	0.365	7.8	1.8
9	0.024	0.437	7.1	1.6
3	0.030	0.532	5.5	1.0
7	0.041	0.557	9.4	1.5
8	0.027	0.481	7.1	1.4
10	0.043	0.555	7.5	1.0
11	0.028	0.477	5.9	1.2

Clark Hill Reservoir ranked sixth in overall trophic quality when the 14 Georgia lakes and reservoirs sampled in 1973 were compared using a combination of six parameters*. Six of the water bodies had less median total phosphorus, seven had less

* See Appendix A.

median orthophosphorus, five had less and one had the same median inorganic nitrogen, six had less mean chlorophyll a, and five had greater mean Secchi disc transparency. Depletion of dissolved oxygen with depth occurred at station 5 in June and at stations 2, 3, 5, 7, and 10 in September; marked depression (2.0 mg/l or less) occurred at stations 3, 7, 8, and 10 in June and at stations 1, 4, and 8 in September.

Blue-green algae were prominent in the September phytoplankton sample (page 8), but Survey limnologists did not observe surface concentrations of algae at that time or nuisance conditions during any of the three sampling visits.

B. Rate-Limiting Nutrient:

The algal assay results indicate the reservoir was phosphorus limited at the time the samples were collected (June, 1973). The reservoir data indicate phosphorus limitation in June and September but nitrogen limitation in November.

C. Nutrient Controllability:

1. Point sources--The estimated phosphorus contribution of point sources amounted to 20.1% of the total load reaching the reservoir during the sampling year. However, in this assessment, no accounting has been made for industrial loads or the loads contributed by a number of privately-owned domestic facilities in the North Carolina portion of the drainage (see pages 14-15).

Therefore, the actual proportion of point-source input to the reservoir is greater than that indicated to some unknown degree.

Of the point sources considered in this report, the Anderson plant contributed 6.3%, the indirect sources in the Lake Hartwell and Lake Secession drainages collectively contributed 5.3%, and the remaining 11 listed municipal sources collectively contributed 8.4%.

The phosphorus loading of 1.59 g/m^2 measured during the sampling year is about 1.5 times that proposed by Vollenweider (Vollenweider and Dillon, 1974) as a eutrophic loading. While even complete removal of phosphorus at the listed sources would still leave a loading of 1.27 $g/m^2/yr$, primary productivity in Clark Hill Reservoir is phosphorus limited much of the time, and it is likely that a high degree of phosphorus removal at <u>all</u> of the point sources in the reservoir drainage would result in significant improvement in the trophic condition of the presently eutrophic embayments (e.g., stations 3, 7, 8, 10, and 11).

2. Non-point sources--The phosphorus contributions of the sampled tributaries amounted to an estimated 76.2% of the total load reaching the reservoir during the sampling year. The Savannah River contributed 32.8%, the Broad River added 25.2%, and the remaining 13 sampled tributaries collectively contributed 18.7%. The ungaged minor tributaries and immediate drainage contributed an

estimated 2.6% of the total.

Four of the sampled tributaries had relatively high export rates during the sampling year, ranging from the 24 kg/km^2 rate of the Little River (D-1) to the 38 kg/km^2 rate of Long Cane Creek (see page 18).

In the Georgia portion of the drainage, all point sources have been accounted for except for the two industrial sources (Hall, 1975a), and the higher rates of the Broad River and the Little River (Q-1) may be due to underestimation of the point-source phosphorus inputs to those streams and/or land-use practices.

The higher rates of the South Carolina tributaries - Long Cane Creek and the Little River (D-1) - probably were largely due to the unmeasured inputs of the privately-owned domestic treatment facilities, the unmeasured industrial inputs, underestimation of municipal loads, or a combination of these.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS†

A. Lake Morphometry††:

1. Surface area: 283.29 kilometers^2.
2. Mean depth: 10.9 meters.
3. Maximum depth: >43 meters.
4. Volume: 3,096.060 x 10^6 m^3.
5. Mean hydraulic retention time: 136 days.

B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

Name	Drainage area (km^2)*	Mean flow (m^3/sec)*
Hawe Creek	18.1	0.168
Long Cane Creek	510.2	5.350
Bold Branch	36.3	0.340
Little River (D-1)	805.5	8.710
Savannah River	7,459.2	175.440
Newford Creek	72.5	0.650
Broad River	3,859.1	50.140
Fishing Creek	217.6	1.890
Soap Creek	82.9	0.680
Dry Fork Creek	28.5	0.235
Germany Creek	88.1	0.730
Mattox Creek	62.2	0.510
Middle Creek	90.6	0.740
Hart Creek	95.8	0.740
Little River (Q-1)	1,051.5	10.010
Minor tributaries & immediate drainage -	1,131.8	8.090
Totals	15,609.9	264.423

2. Outlet -

Savannah River	15,893.2**	264.423**

C. Precipitation***:

1. Year of sampling: 148.3 centimeters.
2. Mean annual: 117.6 centimeters.

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† Table of metric conversions--Appendix B.
†† At permanent pool elevation; Hall, 1975b.
* For limits of accuracy, see Working Paper No. 175, "...Survey Methods, 1973-1976".
** Includes area of lake; outlet area and flow adjusted to equal sum of subdrainage areas and flows.
*** See Working Paper No. 175.

III. LAKE WATER QUALITY SUMMARY

Clark Hill Reservoir was sampled three times during the open-water season of 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from a number of depths at eleven stations on the reservoir (see map, page v). During each visit, a single depth-integrated (4.6 m to surface) sample was composited from the eleven stations for phytoplankton identification and enumeration; and during the first visit, three 18.9-liter depth-integrated samples were composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 42.7 meters at station 1, 33.2 meters at station 2, 16.8 meters at station 3, 25.9 meters at station 4, 13.7 meters at station 5, 21.6 meters at station 6, 13.4 meters at station 7, 7.3 meters at station 8, 14.0 meters at station 9, 11.6 meters at station 10, and 12.2 meters at station 11.

The sampling results are presented in full in Appendix D and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR CLARK HILLS RESERVOIR
STORET CODE 1304

	1ST SAMPLING (6/23/73) 11 SITES			2ND SAMPLING (9/11/73) 11 SITES			3RD SAMPLING (11/12/73) 11 SITES		
PARAMETER	RANGE	MEAN	MEDIAN	RANGE	MEAN	MEDIAN	RANGE	MEAN	MEDIAN
TEMP (C)	14.4 - 29.8	22.4	21.4	16.9 - 31.3	26.1	27.4	11.2 - 18.9	16.5	16.7
DISS OXY (MG/L)	0.0 - 8.7	5.5	6.4	0.0 - 8.2	3.7	4.1	5.0 - 11.2	7.9	7.8
CNDCTVY (MCROMO)	50. - 100.	56.	50.	35. - 116.	58.	54.	30. - 71.	47.	47.
PH (STAND UNITS)	6.4 - 8.2	7.3	7.3	5.6 - 8.3	6.6	6.4	6.6 - 7.7	6.8	6.8
TOT ALK (MG/L)	10. - 36.	18.	17.	11. - 38.	20.	19.	12. - 25.	18.	18.
TOT P (MG/L)	0.014 - 0.065	0.030	0.028	0.006 - 0.068	0.020	0.016	0.019 - 0.097	0.031	0.025
ORTHO P (MG/L)	0.002 - 0.012	0.005	0.005	0.003 - 0.030	0.007	0.007	0.013 - 0.052	0.023	0.022
NO2+NO3 (MG/L)	0.040 - 0.340	0.157	0.140	0.020 - 0.270	0.075	0.030	0.020 - 0.120	0.064	0.050
AMMONIA (MG/L)	0.030 - 0.420	0.096	0.080	0.030 - 1.290	0.128	0.050	0.020 - 0.150	0.071	0.070
KJEL N (MG/L)	0.200 - 1.000	0.358	0.300	0.200 - 1.600	0.434	0.400	0.200 - 2.300	0.284	0.200
INORG N (MG/L)	0.090 - 0.630	0.253	0.250	0.050 - 1.350	0.203	0.120	0.040 - 0.240	0.135	0.130
TOTAL N (MG/L)	0.240 - 1.060	0.514	0.460	0.220 - 1.660	0.508	0.430	0.220 - 2.360	0.348	0.290
CHLRPYL A (UG/L)	4.3 - 12.8	8.2	7.7	3.0 - 9.9	7.1	7.0	0.6 - 11.0	4.9	3.9
SECCHI (METERS)	0.8 - 2.1	1.6	1.6	0.9 - 4.0	1.9	1.9	0.6 - 1.5	1.2	1.2

B. Biological Characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal Units per ml
06/23/73	1. Lyngbya	491
	2. Aphanizomenon	362
	3. Cryptomonas	285
	4. Synedra	207
	5. Melosira	207
	Other genera	1,371
	Total	2,923
09/08/73	1. Raphidiopsis	6,374
	2. Lyngbya	4,976
	3. Oscillatoria	1,342
	4. Dactylococcopsis	1,286
	5. Microcystis	1,174
	Other genera	3,351
	Total	18,503
11/12/73	1. Dactylococcopsis	607
	2. Lyngbya	173
	3. Mallomonas	156
	4. Cryptomonas	121
	5. Synedra	69
	Other genera	295
	Total	1,421

2. Chlorophyll a -

Sampling Date	Station Number	Chlorophyll a (μg/l)
06/23-26/73	1	7.8
	2	9.1
	3	7.7
	4	12.1
	5	7.5
	6	12.5
	7	12.8
	8	4.3
	9	6.5
	10	4.9
	11	4.5

Sampling Date	Station Number	Chlorophyll a (µg/l)
09/08-14/73	1	5.9
	2	3.0
	3	5.0
	4	6.5
	5	8.9
	6	7.0
	7	9.2
	8	7.2
	9	8.7
	10	6.6
	11	9.9
11/12/73	1	0.6
	2	1.3
	3	3.7
	4	2.3
	5	6.0
	6	3.9
	7	6.3
	8	9.7
	9	6.0
	10	11.0
	11	3.2

C. Limiting Nutrient Study:

1. Stations 1, 2, 3, and 4 -

a. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.009	0.144	0.2
0.010 P	0.019	0.144	2.4
0.020 P	0.029	0.144	4.7
0.050 P	0.059	0.144	4.4
0.025 P + 0.5 N	0.034	0.644	12.1
0.050 P + 1.0 N	0.059	1.144	23.0
1.0 N	0.009	1.144	0.1

b. Filtered and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.006	0.147	0.2
0.010 P	0.016	0.147	2.7
0.020 P	0.026	0.147	3.9
0.050 P	0.056	0.147	4.2
0.025 P + 0.5 N	0.031	0.647	12.3
0.050 P + 1.0 N	0.056	1.147	21.5
1.0 N	0.006	1.147	0.1

2. Stations 5, 6, and 7 -

a. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.011	0.195	0.1
0.010 P	0.021	0.195	1.7
0.020 P	0.031	0.195	6.1
0.050 P	0.061	0.195	7.8
0.025 P + 0.5 N	0.036	0.695	9.1
0.050 P + 1.0 N	0.061	1.195	22.1
1.0 N	0.011	1.195	0.1

b. Filtered and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.004	0.176	0.1
0.010 P	0.014	0.176	1.2
0.020 P	0.024	0.176	4.9
0.050 P	0.054	0.176	6.1
0.025 P + 0.5 N	0.029	0.676	9.5
0.050 P + 1.0 N	0.054	1.176	18.2
1.0 N	0.004	1.176	0.1

3. Stations 8, 9, 10, and 11 -

a. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.009	0.256	0.3
0.010 P	0.019	0.256	2.9
0.020 P	0.029	0.256	7.5
0.050 P	0.059	0.256	8.7
0.025 P + 0.5 N	0.034	0.756	12.5
0.050 P + 1.0 N	0.059	1.256	23.9
1.0 N	0.009	1.256	0.3

b. Filtered and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.005	0.246	0.2
0.010 P	0.015	0.246	3.0
0.020 P	0.025	0.246	6.8
0.050 P	0.055	0.246	7.3
0.025 P + 0.5 N	0.030	0.746	12.6
0.050 P + 1.0 N	0.055	1.246	26.6
1.0 N	0.005	1.246	0.2

4. Discussion -

The control yields of the assay alga, Selenastrum capricornutum, indicate that the potential primary productivity of Clark Hill Reservoir was low to moderate at the time the assay samples were collected. The assay results also indicate the reservoir was phosphorus limited at that time. Note the increasing yields with the addition of increasing levels of orthophosphate. Also note that the yields with the addition of nitrogen alone were not significantly different from the

control yields.

The reservoir data also indicate phosphorus limitation in June; by station, the mean inorganic nitrogen/dissolved phosphorus ratios ranged from 31/1 to 94/1, and phosphorus limitation would be expected. The data also indicate phosphorus limitation in September (the mean N/P ratios ranged from 14/1 to 58/1). However, nitrogen limitation is indicated in November; the mean N/P ratios ranged from 3/1 to 10/1, and nitrogen limitation would be expected.

IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the Georgia National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff months of January and February when two samples were collected. Sampling was begun in March, 1973, and was completed in March, 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Georgia District Office of the U.S. Geological Survey for the tributary sites nearest the reservoir.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings†. Nutrient loads shown are those measured minus point-source loads, if any.

Nutrient loads for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the means of the nutrient loads, in $kg/km^2/year$, at stations A-1, C-1, F-1, H-1, J-1, K-1, L-1, M-1, N-1, and P-1 and multiplying the means by the ZZ area in km^2.

The operators of the Abbeville, Calhoun Falls, Elberton #1 and #2, and Lavonia wastewater treatment plants provided monthly effluent samples and corresponding flow data.

The operators of the Due West and Washington plants provided monthly

† See Working Paper No. 175.

effluent samples but only estimated flow data. Nutrient loads for these sources (and the plants at Anderson, Commerce, Iva, and Royston which were not sampled) were estimated at 1.134 kg P and 3.401 kg N/capita/year.

The indirect municipal point-source loads leaving upstream Lake Hartwell† were calculated by multiplying the nutrient loads leaving that lake (33,850 kg P and 3,787,435 kg N) by the fractions of the totals of the nutrient loads contributed by the point sources (0.446 for P and 0.037 for N). The indirect municipal point-source loads leaving Lake Secession* were calculated the same way (11,995 kg P x 0.747 and 188,600 kg N x 0.198).

A. Waste Sources**:

1. Known municipal -

Name	Pop. Served	Treatment	Mean Flow (m^3/d)	Receiving Water
Abbeville, SC	6,500	tr. filter	2,596.5	Norris Creek/ Long Cane Creek
Anderson	25,200	tr. filter	10,598.0	Generostee Creek
Calhoun Falls, SC	2,500	stab. pond	1,226.3	Sawney Creek
Commerce, GA (3 plants)	3,702	prim. clarifier		Grove Creek
		{ stab. pond }	1,401.2***	Crooked Creek
		stab. pond		Crooked Creek
Due West, SC	1,016	tr. filter	227.1	Park Creek
Elberton, GA				
#1	3,500	act. sludge	859.2	Fortson Creek
#2	4,000	act. sludge	2,785.8	Falling Creek
Iva, SC				
#1	1,500	aer. pond	117.6	East Prong Creek
#2	1,000	aer. pond	113.6	East Beards Creek
Lavonia, GA	2,044	tr. filter	1,040.9	Unawatti Creek
Royston, GA	2,428	tr. filter	919.0***	Hannah Creek
Washington, GA	4,094	act. sludge	1,549.6***	Rocky Creek

† Working Paper No. 432.
* Working Paper No. 439.
** Anonymous, 1971, 1972; Foley, 1976.
*** Estimated at 0.3785 m^3/capita/day.

In addition, there are 14 privately-owned domestic wastewater treatment facilities with a combined flow of 870 m^3/day in the South Carolina portion of the drainage. The nutrient impact of these small sources is not known but, with the exception of two lakeshore parks for which loads were estimated, nutrient contributions of those sources are included in sampled tributary loads.

2. Indirect municipal -

Thirty municipal point sources discharge in the Lake Hartwell drainage, and a portion of the nutrient loads from those sources reaches Clark Hill Reservoir via the Lake Hartwell outlet and the Savannah River.

Two municipalities discharge treated wastes in the Lake Secession drainage, and a portion of the nutrient loads from those sources reaches Clark Hill Reservoir via the Lake Secession outlet and the Rocky River - Savannah River.

3. Known industrial -

Name	Type Waste	Treatment	Mean Flow (m^3/d)	Receiving Water
Elberton Poultry Co., Elberton, GA	poultry process.	stab. ponds	7.0	Falling Creek
Reed Poultry Processing, Lincolnton, GA	poultry process.	stab. pond	166.5	Unnamed trib./ Clark Hill Reservoir

In addition to the above sources, there are 11 industrial waste treatment plants of unknown nutrient significance in the South Carolina portion of the Clark Hill Reservoir drainage (combined design flow of 6,470 m^3/day). All of these sources discharge to sampled tributaries, and nutrient contributions (if any) are included in the stream loads.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/yr	% of total
a. Tributaries (non-point load) -		
Hawe Creek	175	<0.1
Long Cane Creek	19,320	4.3
Bold Branch	255	<0.1
Little River (D-1)	19,505	4.3
Savannah River	147,790	32.8
Newford Creek	515	0.1
Broad River	113,495	25.2
Fishing Creek	2,305	0.5
Soap Creek	655	0.1
Dry Fork Creek	280	<0.1
Germany Creek	1,140	0.3
Mattox Creek	950	0.2
Middle Creek	1,285	0.3
Hart Creek	690	0.2
Little River (Q-1)	35,140	7.8
b. Minor tributaries & immediate drainage (non-point load) -	11,545	2.6
c. Known municipal STP's -		
Abbeville	3,880	0.9
Anderson	28,575	6.3
Calhoun Falls	3,190	0.7
Commerce	4,200	0.9
Due West	1,150	0.3
Elberton #1	2,100	0.5
Elberton #2	9,695	2.2
Iva #1	1,700	0.4
Iva #2	1,135	0.3
Lavonia	3,440	0.8
Royston	2,755	0.6
Washington	4,645	1.0
Indirect - Lake Hartwell drainage	15,095	3.3
Indirect - Lake Secession drainage	8,960	2.0
d. Septic tanks* -	75	<0.1
e. Known industrial -		
Elberton Poultry Co., Inc.	?	-
Reed Poultry Processing Co.	?	-
SC sources	?	-
f. Direct precipitation** -	4,960	1.1
Total	450,600	100.0

2. Outputs -

Lake outlet - Savannah River 171,255

3. Net annual P accumulation - 279,345 kg.

* Estimated 352 lakeside residences, 17 camps, and 6 parks; see Working Paper No. 175.
** See Working Paper No. 175.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/ yr	% of total
Hawe Creek	4,530	0.1
Long Cane Creek	111,015	1.9
Bold Branch	5,455	0.1
Little River (D-1)	176,160	3.0
Savannah River	3,108,100	52.7
Newford Creek	11,220	0.2
Broad River	1,271,690	21.6
Fishing Creek	50,315	0.9
Soap Creek	11,820	0.2
Dry Fork Creek	6,020	0.1
Germany Creek	14,230	0.2
Mattox Creek	11,395	0.2
Middle Creek	12,460	0.2
Hart Creek	16,250	0.3
Little River (Q-1)	222,380	3.8
b. Minor tributaries & immediate drainage (non-point load) -	202,820	3.4
c. Known municipal STP's -		
Abbeville	8,900	0.2
Anderson	85,705	1.5
Calhoun Falls	5,510	0.1
Commerce	12,590	0.2
Due West	3,455	0.1
Elberton #1	2,795	<0.1
Elberton #2	14,780	0.3
Iva #1	5,100	0.1
Iva #2	3,400	0.1
Lavonia	5,685	0.1
Royston	8,260	0.1
Washington	13,925	0.2
Indirect - Lake Hartwell drainage	140,135	2.4
Indirect - Lake Secession drainage	37,345	0.6
d. Septic tanks* -	2,905	<0.1
e. Known industrial -		
Elberton Poultry Co.	?	-
Reed Poultry Processing Co.	?	-
SC sources	?	-
f. Direct precipitation** -	305,840	5.2
Total	5,892,190	100.0

2. Outputs -

Lake outlet - Savannah River 7,196,700

3. Net annual N loss - 1,304,510 kg.

* Estimated 352 lakeside residences, 17 camps, and 6 parks; see Working Paper No. 175.
** See Working Paper No. 175.

D. Non-point Nutrient Export by Subdrainage Area:

Tributary	kg P/km²/yr	kg N/km²/yr
Hawe Creek	10	250
Long Cane Creek	38	218
Bold Branch	7	150
Little River (D-1)	24	219
Savannah River	20	417
Newford Creek	7	154
Broad River	29	330
Fishing Creek	11	231
Soap Creek	8	143
Dry Fork Creek	10	211
Germany Creek	13	162
Mattox Creek	15	183
Middle Creek	14	138
Hart Creek	7	170
Little River (Q-1)	33	211

E. Yearly Loads:

In the following table, the existing phosphorus loadings are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Essentially, his "dangerous" loading is one at which the receiving water would become eutrophic or remain eutrophic; his "permissible" loading is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic loading would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
grams/m^2/yr	1.59	0.99	20.8	loss*

Vollenweider phosphorus loadings ($g/m^2/yr$) based on mean depth and mean hydraulic retention time of Clark Hill Reservoir:

"Dangerous" (eutrophic loading)	1.04
"Permissible" (oligotrophic loading)	0.52

* There was an apparent loss of nitrogen during the sampling year. This may have been due to nitrogen fixation in the reservoir, solubilization of previously sedimented nitrogen, recharge with nitrogen-rich ground water, unsampled point sources discharging directly to the reservoir, or underestimation of the nitrogen load from the minor tributaries and immediate drainage. Whatever the cause, a similar nitrogen loss has occurred at Shagawa Lake, Minnesota, which has been intensively studied by EPA's former National Eutrophication and Lake Restoration Branch (Malueg et al., 1975).

V. LITERATURE REVIEWED

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VI. APPENDICES

APPENDIX A

LAKE RANKINGS

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P
1301	ALLATOONA RESERVOIR	0.020	0.150	443.167	7.489	15.000	0.005
1302	BLACKSHEAR LAKE	0.035	0.250	468.091	1.855	11.700	0.014
1303	CHATUGE LAKE	0.014	0.110	382.778	6.339	14.900	0.005
1304	CLARK HILL RESERVOIR	0.024	0.150	439.250	6.715	15.000	0.007
1309	JACKSON LAKE	0.094	0.530	461.385	14.577	15.000	0.027
1310	LAKE SIDNEY LANIER	0.016	0.180	396.417	5.431	15.000	0.004
1311	NOTTELY RESERVOIR	0.015	0.130	405.667	6.656	15.000	0.004
1312	LAKE SEMINOLE	0.040	0.405	456.133	6.760	11.800	0.010
1313	SINCLAIR LAKE	0.028	0.230	440.667	8.006	15.000	0.005
1314	LAKE EUFAULA	0.048	0.345	457.667	9.083	14.400	0.011
1316	BLUE RIDGE LAKE	0.010	0.105	394.889	3.078	15.000	0.004
1317	LAKE HARDING	0.114	0.640	467.538	7.438	14.900	0.045
1318	BURTON LAKE	0.007	0.100	363.889	2.733	14.900	0.003
1319	HIGH FALLS LAKE	0.047	0.115	459.444	15.075	14.900	0.009
4505	LAKE HARTWELL	0.008	0.160	340.667	3.083	15.000	0.003

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
1301	ALLATOONA RESERVOIR	57 (8)	57 (8)	43 (6)	29 (4)	25 (0)	57 (7)	268
1302	BLACKSHEAR LAKE	36 (5)	29 (4)	0 (0)	100 (14)	100 (14)	14 (2)	279
1303	CHATUGE LAKE	79 (11)	86 (12)	86 (12)	64 (9)	68 (8)	57 (7)	440
1304	CLARK HILL RESERVOIR	50 (7)	64 (9)	57 (8)	50 (7)	25 (0)	43 (6)	289
1309	JACKSON LAKE	7 (1)	7 (1)	14 (2)	7 (1)	25 (0)	7 (1)	67
1310	LAKE SIDNEY LANIER	64 (9)	43 (6)	71 (10)	71 (10)	25 (0)	79 (10)	353
1311	NOTTELY RESERVOIR	71 (10)	71 (10)	64 (9)	57 (8)	25 (0)	79 (10)	367
1312	LAKE SEMINOLE	29 (4)	14 (2)	36 (5)	43 (6)	93 (13)	29 (4)	244
1313	SINCLAIR LAKE	43 (6)	36 (5)	50 (7)	21 (3)	25 (0)	57 (7)	232
1314	LAKE EUFAULA	14 (2)	21 (3)	29 (4)	14 (2)	86 (12)	21 (3)	185
1316	BLUE RIDGE LAKE	86 (12)	93 (13)	79 (11)	86 (12)	25 (0)	79 (10)	448
1317	LAKE HARDING	0 (0)	0 (0)	7 (1)	36 (5)	68 (8)	0 (0)	111
1318	BURTON LAKE	100 (14)	100 (14)	93 (13)	93 (13)	68 (8)	93 (13)	547
1319	HIGH FALLS LAKE	21 (3)	79 (11)	21 (3)	0 (0)	68 (8)	36 (5)	225
4505	LAKE HARTWELL	93 (13)	50 (7)	100 (14)	79 (11)	25 (0)	100 (14)	447

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	1318	BURTON LAKE	547
2	1316	BLUE RIDGE LAKE	448
3	4505	LAKE HARTWELL	447
4	1303	CHATUGE LAKE	440
5	1311	NOTTELY RESERVOIR	367
6	1310	LAKE SIDNEY LANIER	353
7	1304	CLARK HILL RESERVOIR	289
8	1302	BLACKSHEAR LAKE	279
9	1301	ALLATOONA RESERVOIR	268
10	1312	LAKE SEMINOLE	244
11	1313	SINCLAIR LAKE	232
12	1319	HIGH FALLS LAKE	225
13	1314	LAKE EUFAULA	185
14	1317	LAKE HARDING	111
15	1309	JACKSON LAKE	67

APPENDIX B

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX C

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR GEORGIA 08/04/76

LAKE CODE 1304 CLARKE HILL RESERVOIR

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 15928.5

NORMALIZED FLOWS(CMS)

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
1304A1	18.1	0.224	0.275	0.311	0.249	0.159	0.136	0.127	0.079	0.079	0.088	0.127	0.170	0.168
1304B1	510.2	7.84	9.12	11.33	7.70	4.53	3.14	3.91	3.14	2.35	2.27	3.99	5.15	5.35
1304C1	36.3	0.45	0.54	0.62	0.51	0.31	0.27	0.25	0.16	0.16	0.18	0.25	0.34	0.34
1304D1	805.5	12.74	14.87	18.43	12.49	7.39	5.13	6.34	5.13	3.85	3.65	6.48	8.35	8.71
1304E1	7459.2	179.64	163.95	215.69	219.23	195.64	194.23	148.55	166.45	144.16	128.47	148.83	199.46	175.44
1304E2	15928.5	386.81	311.17	248.40	213.96	205.67	210.79	205.55	201.11	271.70	293.02	257.63	370.07	264.56
1304F1	72.5	0.88	1.05	1.16	0.96	0.62	0.54	0.48	0.31	0.31	0.34	0.51	0.65	0.65
1304G1	3859.1	63.00	80.33	92.71	69.60	49.53	39.33	36.30	31.63	27.78	30.27	33.30	49.78	50.14
1304H1	217.6	2.52	3.06	3.40	2.80	1.81	1.53	1.44	0.91	0.88	0.99	1.44	1.93	1.89
1304J1	82.9	1.02	1.30	1.84	0.96	0.65	0.40	0.31	0.31	0.26	0.23	0.21	0.68	0.68
1304K1	28.5	0.340	0.453	0.651	0.340	0.227	0.136	0.108	0.108	0.091	0.076	0.074	0.227	0.235
1304L1	88.1	1.10	1.39	1.95	1.02	0.71	0.42	0.34	0.34	0.28	0.23	0.23	0.74	0.73
1304M1	62.2	0.76	0.99	1.39	0.74	0.51	0.28	0.23	0.23	0.20	0.17	0.16	0.51	0.51
1304N1	90.6	1.10	1.42	2.01	1.05	0.74	0.42	0.34	0.34	0.28	0.25	0.23	0.74	0.74
1304P1	95.8	1.10	1.42	1.98	1.05	0.71	0.42	0.34	0.34	0.28	0.25	0.23	0.74	0.74
1304Q1	1051.5	15.77	19.45	25.26	16.91	11.67	5.32	4.02	2.44	2.49	4.73	3.79	8.86	10.01
1304ZZ	1131.8	13.03	17.30	22.14	14.16	5.66	3.20	3.71	3.06	2.10	2.83	3.82	6.65	8.09

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 15928.5
SUM OF SUB-DRAINAGE AREAS = 15609.9

TOTAL FLOW IN = 3175.86
TOTAL FLOW OUT = 3175.87

NOTE *** LAKE AREA=123 SQ MI , NOT INCLUDED IN SUM OF SUB-DRAINAGE AREAS

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1304A1	3	73	0.368	11	0.269				
	4	73	0.623	15	0.173				
	5	73	0.246	6	0.105				
	6	73	1.359	6	0.099				
	7	73	0.224	14	0.113	24	0.283		
	8	73	0.068						
	9	73	0.074	8	0.027				
	10	73	0.037	14	0.028				
	11	73	0.034	10	0.025				
	12	73	0.040	9	0.045				
	1	74	0.340	12	0.099	26	0.195		
	2	74	0.368	9	0.340	23	0.340		

TRIBUTARY FLOW INFORMATION FOR GEORGIA 08/04/76

LAKE CODE 1304 CLARKE HILL RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
130481	3	73	13.252	10	8.212				
	4	73	19.171	8	30.016				
	5	73	7.079	10	4.106				
	6	73	31.149	4	3.964				
	7	73	6.881	6	4.814				
	8	73	2.633	17	2.265				
	9	73	2.152						
	10	73	0.963	2	4.814				
	11	73	1.048						
	12	73	1.246	3	1.869	9	2.209		
	1	74	11.525	11	3.964	26	6.513		
	2	74	12.120	8	15.291	22	9.911		
1304C1	3	73	0.736	10	0.538				
	4	73	1.274	8	1.586				
	5	73	0.481	10	0.283				
	6	73	2.662	4	0.275				
	7	73	0.453	6	0.340				
	8	73	0.139	17	0.173				
	9	73	0.144						
	10	73	0.071	2	0.340				
	11	73	0.065						
	12	73	0.082	3	0.147	9	0.170		
	1	74	0.680	11	0.283	25	0.595		
	2	74	0.708	8	0.906	22	0.623		
1304D1	3	73	21.577	10	13.592				
	4	73	31.149	8	41.059				
	5	73	11.525	10	7.362				
	6	73	50.970	4	6.938				
	7	73	11.157	6	8.495				
	8	73	4.304	17	4.389				
	9	73	3.540						
	10	73	1.501	2	8.212				
	11	73	1.699						
	12	73	2.010	3	3.681	9	4.248		
	1	74	17.953	11	7.079	25	15.008		
	2	74	19.652	8	33.980	22	15.857		
1304E1	3	73	294.495	10	117.798				
	4	73	311.485	8	225.402				
	5	73	261.421	10	311.485				
	6	73	352.261	4	328.475				
	7	73	138.498	6	308.654				
	8	73	154.667	17	97.976				
	9	73	135.553						
	10	73	101.091	2	155.459	14	22.682		
	11	73	129.691						
	12	73	170.751	3	139.319	9	27.524		
	1	74	342.634	11	487.050	25	450.238		
	2	74	345.465	8	492.713	22	481.386		

TRIBUTARY FLOW INFORMATION FOR GEORGIA 08/04/76

LAKE CODE 1304 CLARKE HILL RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1304E2	3	73	432.766	10	275.749				
	4	73	602.016	15	794.287				
	5	73	290.191	18	254.144				
	6	73	527.713	24	253.945				
	7	73	184.003	15	145.832				
	8	73	197.142	12	120.347				
	9	73	169.476	9	191.988				
	10	73	173.582	14	119.497				
	11	73	174.998	12	118.364				
	12	73	221.438	8	165.654				
	1	74	453.069	13	356.792	27	543.683		
	2	74	555.010	21	773.050				
	3	74	201.333	10	135.355				
1304F1	3	73	1.359	11	0.991				
	4	73	2.407	15	0.821				
	5	73	0.963	6	0.623				
	6	73	5.352	2	0.680				
	7	73	0.850	14	0.651	24	1.048		
	8	73	0.261						
	9	73	0.283	8	0.340				
	10	73	0.142						
	11	73	0.142	10	0.311				
	12	73	0.170	9	0.425				
	1	74	1.303	12	0.623	26	0.850		
	2	74	1.388	9	1.104	23	1.133		
1304G1	3	73	143.566	10	107.604				
	4	73	154.044	15	76.739				
	5	73	97.127	10	77.588				
	6	73	88.462	4	74.360				
	7	73	42.645	6	43.381				
	8	73	32.564	17	31.573				
	9	73	32.564						
	10	73	40.493	2	144.416				
	11	73	33.131						
	12	73	50.404	3	31.149				
	1	74	145.265	12	81.836	25	89.198		
	2	74	96.277	8	210.961	22	93.162		
1304H1	3	73	3.964	11	2.973				
	4	73	6.994	15	2.237				
	5	73	2.832	6	1.642				
	6	73	15.178	2	1.812				
	7	73	2.549	6	1.897	24	3.143		
	8	73	0.765						
	9	73	0.821	12	0.963				
	10	73	0.396	14	0.708				
	11	73	0.368	10	0.651				
	12	73	0.453	9	0.963				
	1	74	3.710	12	1.586	26	2.435		
	2	74	4.078	9	4.502	23	3.540		

TRIBUTARY FLOW INFORMATION FOR GEORGIA 08/04/76

LAKE CODE 1304 CLARKE HILL RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1304J1	3	73	2.152	11	1.076				
	4	73	2.407	15	0.680				
	5	73	1.019	6	0.425				
	6	73	3.936	2	0.510				
	7	73	0.538	6	0.538	24	1.161		
	8	73	0.261						
	9	73	0.244	8	0.133				
	10	73	0.091	14	0.125				
	11	73	0.054	10	0.096				
	12	73	0.164	9	0.193				
	1	74	1.501	12	0.396	26	0.793		
	2	74	1.727	9	2.435	23	1.472		
1304K1	3	73	0.765	11	0.340				
	4	73	0.850	15	0.218				
	5	73	0.340	6	0.125				
	6	73	1.359	2	0.147				
	7	73	0.190	6	0.159	24	0.396		
	8	73	0.091						
	9	73	0.082	8	0.031				
	10	73	0.031	14	0.028				
	11	73	0.020	10	0.023				
	12	73	0.054	9	0.048				
	1	74	0.510	12	0.113	26	0.246		
	2	74	0.595	9	0.906	23	0.481		
1304L1	3	73	1.784	11	1.444				
	4	73	1.586	15	1.104				
	5	73	0.566	18	0.249				
	6	73	0.850	24	0.396				
	7	73	0.340	15	0.252				
	8	73	0.278	12	0.221				
	9	73	0.204	9	0.048				
	10	73	0.130	14	0.059				
	11	73	0.178	12	0.108				
	12	73	0.510	8	0.091				
	1	74	0.623	13	0.283	27	1.076		
	2	74	1.671	21	1.331				
	3	74	0.765	10	0.566				
1304M1	3	73	1.274	11	1.104				
	4	73	1.161	15	0.736				
	5	73	0.425	18	0.093				
	6	73	0.566	24	0.176				
	7	73	0.221	15	0.093				
	8	73	0.187	12	0.076				
	9	73	0.142	9	0.008				
	10	73	0.096	14	0.008				
	11	73	0.125	12	0.025				
	12	73	0.368	8	0.023				
	1	74	0.425	13	0.108	27	0.680		
	2	74	1.189	21	1.019				
	3	74	0.538	10	0.283				

TRIBUTARY FLOW INFORMATION FOR GEORGIA 08/04/76

LAKE CODE 1304 CLARKE HILL RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1304N1	3	73	1.841	11	1.529				
	4	73	1.642	15	1.048				
	5	73	0.595	18	0.136				
	6	73	0.850	24	0.249				
	7	73	0.334	7	0.110				
	8	73	0.278	12	0.110				
	9	73	0.204	9	0.011				
	10	73	0.142	14	0.017				
	11	73	0.178	12	0.040				
	12	73	0.510	8	0.031				
	1	74	0.623	13	0.147	27	0.991		
	2	74	1.699	21	1.416				
	3	74	0.793	10	0.396				
1304P1	3	73	1.812	11	1.444				
	4	73	1.642	15	1.048				
	5	73	0.566	18	0.133				
	6	73	0.850	24	0.244				
	7	73	0.340	15	0.133				
	8	73	0.278	12	0.110				
	9	73	0.204	9	0.011				
	10	73	0.142	14	0.017				
	11	73	0.178	12	0.040				
	12	73	0.510	8	0.028				
	1	74	0.623	13	0.156	27	0.934		
	2	74	1.699	21	1.331				
	3	74	0.793	10	0.396				
1304Q1	3	73	23.928	11	18.406				
	4	73	27.128	15	14.527				
	5	73	9.713	18	3.540				
	6	73	11.044	24	5.493				
	7	73	4.049	15	3.540				
	8	73	2.067	12	3.143				
	9	73	1.869	9	0.736				
	10	73	2.690	14	0.878				
	11	73	3.002	12	1.586				
	12	73	6.286	8	1.359				
	1	74	8.976	13	4.021	27	13.875		
	2	74	23.333	21	16.792				
	3	74	9.854	10	7.759				
1304ZZ	3	73	25.910						
	4	73	35.396						
	5	73	8.835						
	6	73	31.715						
	7	73	6.513						
	8	73	2.577						
	9	73	1.926						
	10	73	1.161						
	11	73	0.963						
	12	73	1.586						
	1	74	19.227						
	2	74	11.893						

APPENDIX D

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 76/08/04

130401
33 39 43.0 082 11 58.0 3
CLARK HILL RESERVOIR
13073 GEORGIA
031391

11EPALES 2111202
0144 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/23	10 10	0000	27.9		80	50K	7.40	19	0.070	0.500	0.060	0.008
	10 10	0006	27.9	7.9		50K	7.70	14	0.050	0.200K	0.040	0.009
	10 10	0015	27.5	7.9		50K	7.60	13	0.080	0.200K	0.060	0.005
	10 10	0025	21.7	4.5		50K	7.40	15	0.050	0.300	0.160	0.005
	10 10	0040	19.5	4.7		50K	7.10	13	0.080	0.300	0.270	0.009
	10 10	0065	17.1	6.4		50K	7.10	13	0.100	0.300	0.330	0.008
	10 10	0090	16.0	6.4		50K	7.00	13	0.080	0.300	0.320	0.007
	10 10	0115	15.5	5.6		50K	6.90	14	0.060	0.400	0.290	0.006
	10 10	0140	14.4	3.9		55	6.80	16	0.090	0.300	0.300	0.006
73/09/11	14 30	0000	29.8		156	54	6.20	16	0.080	1.100	0.040	0.007
	14 30	0005	29.0	8.0		50	6.70	16	0.030	0.400	0.020	0.005
	14 30	0015	28.4	7.2		49	6.30	17	0.040	0.300	0.030	0.006
	14 30	0025	27.0	2.4		48	5.90	18	0.030	0.300	0.040	0.005
	14 30	0040	23.8	0.6		41	5.80	17	0.030	0.200K	0.160	0.005
	14 30	0065	20.9	1.2		37	5.90	16	0.030	0.200K	0.270	0.005
	14 30	0090	19.6	0.6		39	5.80	17	0.030	0.200K	0.230	0.005
	14 30	0115	18.1	0.1		44	5.90	19	0.080	0.200	0.200	0.005
	14 30	0130	16.9	0.1		53	6.00	25	0.200	0.400	0.160	0.007
73/11/12	15 00	0000	18.9		60	45	7.30	16	0.070	0.200K	0.100	0.018
	15 00	0010	18.5	6.8		42	7.10	16	0.060	0.200K	0.100	0.014
	15 00	0025	18.5	6.8		40	6.90	15	0.060	0.200	0.100	0.015
	15 00	0050	18.5	7.0		42	6.80	15	0.060	0.200K	0.100	0.016
	15 00	0080	18.4	7.0		43	6.70	16	0.070	0.200K	0.100	0.016
	15 00	0110	18.1			48	6.70	18	0.120	0.200	0.100	0.024
	15 00	0136	17.9	5.0		48	6.70	20	0.150	0.300	0.090	0.022

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

130401
33 39 43.0 082 11 58.0 3
CLARK HILL RESERVOIR
13073 GEORGIA
031391

11EPALES 2111202
0144 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/23	10 10	0000	0.027	7.8
	10 10	0006	0.019	
	10 10	0015	0.021	
	10 10	0025	0.014	
	10 10	0040	0.030	
	10 10	0065	0.034	
	10 10	0090	0.035	
	10 10	0115	0.037	
	10 10	0140	0.047	
73/09/11	14 30	0000	0.012	5.9
	14 30	0005	0.009	
	14 30	0015	0.010	
	14 30	0025	0.008	
	14 30	0040	0.007	
	14 30	0065	0.006	
	14 30	0090	0.007	
	14 30	0115	0.011	
	14 30	0130	0.018	
73/11/12	15 00	0000	0.026	0.6
	15 00	0010	0.021	
	15 00	0025	0.021	
	15 00	0050	0.024	
	15 00	0080	0.024	
	15 00	0110	0.024	
	15 00	0136	0.028	

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STORET RETRIEVAL DATE 76/08/04

130402
33 36 20.0 082 27 10.0 3
CLARK HILL RESERVOIR
13073 GEORGIA
031391

11EPALES 2111202
0113 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/23	13 30	0000	28.5		72	55	7.50	16	0.080	1.000	0.060	0.012
	13 30	0006	28.2	8.1		50K	7.70	14	0.070	0.300	0.050	0.005
	13 30	0015	27.8	7.6		50K	7.60	14	0.100	0.300	0.080	0.003
	13 30	0030	20.7	4.1		55	7.30	15	0.120	0.200K	0.250	0.004
	13 30	0050	18.1	3.9		60	7.10	14	0.060	0.800	0.220	0.007
	13 30	0070	16.0	2.7		61	7.10	13	0.100	0.200	0.260	0.008
	13 30	0090	15.1	2.4		63	7.00	14	0.100	0.300	0.300	0.006
	13 30	0109	14.9	2.2		62	6.60	16	0.080	0.200K	0.290	0.006
73/09/14	10 15	0000	27.8		98	52	6.70	12	0.060	0.400	0.030	0.005
	10 15	0005	27.8	6.6		53	6.50	11	0.040	0.200K	0.020	0.004
	10 15	0020	27.4	0.0		54	6.30	13	0.050	0.200K	0.020	0.003
	10 15	0035	24.3	0.0		55	6.10	15	0.060	0.200K	0.030	0.009
	10 15	0050	21.7	0.0		54	6.30	15	0.100	0.200K	0.020	0.004
	10 15	0075	20.1	0.0		59	6.40	16	0.170	0.300	0.030	0.005
	10 15	0100	18.4	0.0		73	6.30	21	0.300	0.400	0.040	0.005
73/11/12	15 15	0000	18.3		60	50	6.90	21	0.090	0.300	0.040	0.018
	15 15	0005	18.5	8.0		49	6.80	21	0.090	0.200	0.040	0.018
	15 15	0015	17.7	7.8		48	6.70	20	0.090	0.200	0.040	0.018
	15 15	0030	17.7	7.8		47	6.70	19	0.090	0.200	0.040	0.018
	15 15	0050	17.6	8.0		48	6.70	19	0.090	0.200	0.040	0.019
	15 15	0070	17.6	7.8		47		18	0.080	0.300	0.040	0.019
	15 15	0086	17.5	9.0		48	6.70	18	0.090	0.400	0.040	0.019

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

130402
33 38 20.0 082 27 10.0 3
CLARK HILL RESERVOIR
13073 GEORGIA
031391

11EPALES 2111202
0113 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/23	13 30	0000	0.031	9.1
	13 30	0006	0.015	
	13 30	0015	0.017	
	13 30	0030	0.018	
	13 30	0050	0.026	
	13 30	0070	0.035	
	13 30	0090	0.040	
	13 30	0109	0.044	
73/09/14	10 15	0000	0.010	3.0
	10 15	0005	0.009	
	10 15	0020	0.009	
	10 15	0035	0.011	
	10 15	0050	0.010	
	10 15	0075	0.012	
	10 15	0100	0.016	
73/11/12	15 15	0000	0.024	1.3
	15 15	0005	0.025	
	15 15	0015	0.026	
	15 15	0030	0.025	
	15 15	0050	0.025	
	15 15	0070	0.025	
	15 15	0086	0.024	

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STORET RETRIEVAL DATE 76/08/04

130403
33 39 50.0 082 25 10.0 3
CLARK HILL RESERVOIR
13073 GEORGIA

031391

11EPALES 2111202
0059 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/23	14 45	0000	29.5			60	7.30	20	0.110	1.000	0.060	0.006
	14 45	0006	28.8	7.9		60	7.40	18	0.060	0.400	0.040	0.005
	14 45	0015	26.4	4.7		65	7.30	22	0.050	0.300	0.050	0.004
	14 45	0030	20.7	0.3		88	7.20	30	0.100	0.700	0.080	0.006
	14 45	0055	17.8	0.1		100	7.00	35	0.350	0.700	0.100	0.011
73/09/14	09 25	0000	28.0		54	72	6.50	17	0.050	0.400	0.030	0.004
	09 25	0005	28.0	5.0		70	6.50	17	0.040	0.200	0.020	0.004
	09 25	0015	27.9	4.2		72	6.40	16	0.060	0.200	0.020	0.004
	09 25	0025	27.7	2.0		78	6.30	21	0.190	0.400	0.020	0.006
	09 25	0035	25.0	0.0		112	6.40	32	0.440	0.700	0.030	0.010
	09 25	0050	21.9	0.0		116	6.30	37	0.730	1.300	0.030	0.008
73/11/12	13 00	0000	16.6		24	65	6.80	24	0.100	0.400	0.050	0.033
	13 00	0010	16.5	6.8		65	6.80	25	0.100	0.200	0.050	0.026
	13 00	0025	16.4			65	7.00	24	0.110	0.200	0.050	0.025
	13 00	0036	16.4	7.2		65	6.90	24	0.100	0.200K	0.050	0.026

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/23	14 45	0000	0.025	7.7
	14 45	0006	0.022	
	14 45	0015	0.023	
	14 45	0030	0.033	
	14 45	0055	0.057	
73/09/14	09 25	0000	0.016	5.0
	09 25	0005	0.015	
	09 25	0015	0.016	
	09 25	0025	0.020	
	09 25	0035	0.036	
	09 25	0050	0.052	
73/11/12	13 00	0000	0.054	3.7
	13 00	0010	0.027	
	13 00	0025	0.025	
	13 00	0036	0.027	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

130404
33 46 58.0 082 17 52.0 3
CLARK HILL RESERVOIR
13181 GEORGIA

031391

11EPALES 2111202
0089 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/23	15 40	0000	29.3		50	62	7.90	19	0.110	0.400	0.080	0.003
	15 40	0006	28.7	8.5		50K	7.90	16	0.060	0.200K	0.050	0.004
	15 40	0015	27.1	6.1		55	7.60	19	0.060	0.200K	0.050	0.004
	15 40	0030	21.2	5.0		50K	7.40	19	0.080	0.200K	0.220	0.004
	15 40	0050	17.6	7.0		50K	7.30	19	0.100	0.200K	0.260	0.005
	15 40	0070	16.3	7.1		50K	7.20	19	0.090	0.200K	0.260	0.005
	15 40	0085	16.3	7.2		50K	7.10	17	0.080	0.200K	0.260	0.005
73/09/08	13 25	0000	30.2		73	52	7.80	17	0.080	0.300	0.050	0.014
	13 25	0005	29.4	8.0		50	7.40	16	0.030	0.200	0.030	0.009
	13 25	0015	28.9	6.4		48	6.90	17	0.030	0.200	0.030	0.008
	13 25	0025	27.0	1.6		49	6.50	18	0.040	0.200K	0.090	0.008
	13 25	0040	23.0	2.2		38	6.00	17	0.040	0.200K	0.230	0.010
	13 25	0055	21.5	2.8		36	5.70	17	0.060	0.200K	0.210	0.007
	13 25	0070	20.7	4.2		35	5.60	15	0.090	0.200K	0.190	0.008
	13 25	0080	20.5	4.8		45	5.90	16	0.120	0.200K	0.190	0.007
73/11/12	12 30	0000	18.1		48	47	6.80	16	0.060	0.300	0.070	0.030
	12 30	0010	17.7	7.8		47	6.80	15	0.070	0.200K	0.080	0.017
	12 30	0025	17.7	7.8		47	6.80	15	0.060	0.200K	0.070	0.014
	12 30	0040	16.9	8.0		46	6.90	12	0.050	0.200K	0.070	0.021

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

130404
33 46 58.0 082 17 52.0 3
CLARK HILL RESERVOIR
13181 GEORGIA
031391

11EPALES 2111202
0049 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/23	15 40	0000	0.014	12.1
	15 40	0006	0.022	
	15 40	0015	0.019	
	15 40	0030	0.031	
	15 40	0050	0.028	
	15 40	0070	0.033	
	15 40	0085	0.037	
73/09/08	13 25	0000	0.014	6.5
	13 25	0005	0.015	
	13 25	0015	0.013	
	13 25	0025	0.013	
	13 25	0040	0.011	
	13 25	0055	0.012	
	13 25	0070	0.017	
	13 25	0080	0.023	
73/11/12	12 30	0000	0.030	2.3
	12 30	0010	0.024	
	12 30	0025	0.022	
	12 30	0040	0.028	

STORET RETRIEVAL DATE 74/08/04

130405
33 49 46.0 082 24 12.0 3
CLARK HILL RESERVOIR
13181 GEORGIA
031391

11EPALES 2111202
0049 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/25	10 00	0000	29.4		72	55	7.30	22	0.060	0.400	0.040	0.003
	10 00	0006	28.8	7.4		52	7.30	22	0.060	0.400	0.050	0.004
	10 00	0015	24.7	0.6		72	7.00	30	0.100	0.600	0.070	0.004
	10 00	0030	19.4	0.0		68	6.80	29	0.180	0.400	0.060	0.005
	10 00	0045	17.0	0.0		75	6.70	32	0.340	0.600	0.080	0.009
73/09/08	09 40	0000	30.1		73	60	7.40	22	0.040	0.400	0.030	0.007
	09 40	0005	29.8	7.4		59	6.80	21	0.030	0.200	0.020	0.007
	09 40	0015	29.0	5.0		58	6.20	23	0.080	0.300	0.030	0.007
	09 40	0025	27.0	0.0		73	6.00	26	0.190	0.500	0.040	0.007
	09 40	0040	22.9	0.0		104	5.90	36	1.290	1.600	0.060	0.016
73/11/12	12 15	0000	16.9		36	50	6.80	19	0.080	2.300	0.060	0.024
	12 15	0005	16.7			49	6.80	19	0.080	0.300	0.050	0.023
	12 15	0015	16.7	7.8		49	6.80	19	0.080	0.200	0.050	0.022
	12 15	0036	16.3	8.0		50	6.80	19	0.080	0.200	0.050	0.022

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/25	10 00	0000	0.018	7.5
	10 00	0006	0.027	
	10 00	0015	0.037	
	10 00	0030	0.028	
	10 00	0045	0.033	
73/09/08	09 40	0000	0.013	8.9
	09 40	0005	0.014	
	09 40	0015	0.020	
	09 40	0025	0.023	
	09 40	0040	0.036	
73/11/12	12 15	0000	0.030	6.0
	12 15	0005	0.025	
	12 15	0015	0.022	
	12 15	0036	0.029	

STORET RETRIEVAL DATE 76/08/04

130406
33 51 21.0 082 23 17.0 3
CLARK HILL RESERVOIR
13141 GEORGIA
031391

11EPALES 2111202
0074 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/25	10 50	0000	29.1		84	50K	7.90	21	0.060	0.400	0.040	0.009
	10 50	0006	28.9	8.7		50K	8.20	23	0.070	0.400	0.040	0.004
	10 50	0015	25.2	3.4		61	7.60	16	0.080	0.300	0.100	0.003
	10 50	0025	21.1	6.4		50K	7.50	13	0.070	0.200	0.200	0.002
	10 50	0035	17.3	7.8		50K	7.40	12	0.050	0.200K	0.250	0.002
	10 50	0045	16.9	7.8		50K	7.30	13	0.030	0.200K	0.230	0.002
	10 50	0060	16.4	8.7		50K	7.30	28	0.050	0.200K	0.240	0.006
	10 50	0071	16.3	7.8		50K	7.20	10K	0.060	0.200K	0.240	0.004
73/09/08	12 35	0000	30.7		75	58	8.00	21	0.060	0.700	0.030	0.009
	12 35	0005	29.8	8.2		54	7.60	19	0.030	0.200	0.030	0.008
	12 35	0015	29.0	7.0		51	7.10	20	0.030	0.200	0.020	0.010
	12 35	0025	26.4	4.0		48	6.60	19	0.040	0.200K	0.080	0.007
	12 35	0040	22.6	4.4		39	6.30	18	0.060	0.200K	0.160	0.007
	12 35	0055	21.2	3.6		39	6.10	18	0.120	0.200K	0.180	0.007
	12 35	0065	20.9	3.4		37	5.90	14	0.130	0.200K	0.170	0.009
73/11/12	11 45	0000	17.5		48	44	6.90	14	0.060	0.300	0.050	0.033
	11 45	0005	17.1	8.0		45	6.80	15	0.050	0.200K	0.050	0.021
	11 45	0015	17.0	8.4		45	6.90	16	0.060	0.200K	0.050	0.020
	11 45	0030	17.1	7.6		44	6.90	16	0.050	0.200K	0.050	0.021
	11 45	0055	16.6	8.0		44	6.90	17	0.060	0.200K	0.050	0.019
	11 45	0065	15.6	7.7		46	6.70	21	0.140	0.200	0.100	0.026

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/14

130406
33 51 21.0 082 23 17.0 3
CLARK HILL RESERVOIR
13161 GEORGIA
031391

11FPALES 2111202
0074 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/25	10 50	0000	0.016	12.5
	10 50	0006	0.021	
	10 50	0015	0.026	
	10 50	0025	0.028	
	10 50	0035	0.020	
	10 50	0045	0.023	
	10 50	0060	0.029	
	10 50	0071	0.031	
73/09/08	12 35	0000	0.014	7.0
	12 35	0005	0.014	
	12 35	0015	0.012	
	12 35	0025	0.011	
	12 35	0040	0.011	
	12 35	0055	0.014	
	12 35	0065	0.026	
73/11/12	11 45	0000	0.036	3.9
	11 45	0005	0.020	
	11 45	0015	0.021	
	11 45	0030	0.019	
	11 45	0055	0.025	
	11 45	0065	0.041	

STORET RETRIEVAL DATE 76/08/04

130407
33 52 02.0 082 21 11.0 3
CLARK HILL RESERVOIR
13181 GEORGIA 031391

11EPALES 2111202
0048 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/25	16 00	0000	29.8		60	65	8.00	30	0.080	0.700	0.050	0.004
	16 00	0006	28.6	8.7		58	8.10	26	0.060	0.500	0.040	0.005
	16 00	0015	24.9	1.2		78	7.60	33	0.100	0.400	0.120	0.005
	16 00	0030	20.5	0.6		83	7.30	36	0.240	0.500	0.110	0.004
	16 00	0044	16.6	3.6		55	7.30	22	0.060	0.200	0.340	0.005
73/09/08	13 00	0000	31.3		76	59	7.80	17	0.040	0.500	0.030	0.005
	13 00	0005	29.9	7.8		56	7.30	15	0.030	0.200	0.020	0.007
	13 00	0015	29.0	4.2		64	6.80	20	0.030	0.300	0.020	0.011
	13 00	0023	27.4	0.0		105	6.30	33	0.180	0.400	0.050	0.014
	13 00	0030	24.8	0.0		115	6.20	38	0.720	1.100	0.060	0.030
	13 00	0040	22.6	0.8		84	6.10	32	0.650	1.100	0.030	0.024
73/11/12	11 30	0000	16.8		36	56	6.80	20	0.070	0.500	0.050	0.036
	11 30	0010	16.7	8.0		53	6.80	18	0.060	0.200	0.050	0.022
	11 30	0025	16.6	6.6		53	6.70	19	0.070	0.400	0.050	0.023
	11 30	0039	16.2	6.4		71	6.60	22	0.110	0.300	0.040	0.027

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/25	16 00	0000	0.030	12.8
	16 00	0006	0.039	
	16 00	0015	0.050	
	16 00	0030	0.065	
	16 00	0044	0.033	
73/09/08	13 00	0000	0.014	9.2
	13 00	0005	0.016	
	13 00	0015	0.023	
	13 00	0023	0.037	
	13 00	0030	0.068	
	13 00	0040	0.056	
73/11/12	11 30	0000	0.051	6.3
	11 30	0010	0.035	
	11 30	0025	0.052	
	11 30	0038	0.052	

STORET RETRIEVAL DATE 76/08/04

130408
33 54 52.0 082 33 27.0 3
CLARK HILL RESERVOIR
13121 GEORGIA

031391

11EPALES 2111202
0028 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/26	09 40	0000	28.5		60	60	7.90	14	0.080	0.500	0.050	0.004
	09 40	0006	28.0	8.4		50	7.60	16	0.060	0.300	0.040	0.004
	09 40	0015	24.5	3.1		58	6.50	24	0.070	0.400	0.090	0.004
	09 40	0024	18.9	2.0		55	6.40	22	0.100	0.200	0.200	0.005
73/09/10	11 00	0000	29.9		56	64		20	0.060	0.700	0.040	0.008
	11 00	0005	29.7	6.8		65		20	0.030	0.400	0.030	0.007
	11 00	0019	27.4	1.0		80		28	0.210	0.500	0.030	0.006
73/11/12	09 45	0000	15.3		48	49	6.60	23	0.070	0.700	0.030	0.029
	09 45	0005	15.3	7.2		50	6.60	22	0.050	0.300	0.020	0.021
	09 45	0018	15.3	8.4		50	6.70	13	0.040	0.200K	0.080	0.021

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/26	09 40	0000	0.022	4.3
	09 40	0006	0.024	
	09 40	0015	0.040	
	09 40	0024	0.026	
73/09/10	11 00	0000	0.018	7.2
	11 00	0005	0.017	
	11 00	0019	0.026	
73/11/12	09 45	0000	0.049	9.7
	09 45	0005	0.028	
	09 45	0018	0.022	

K VALUE KNOWN TO BE
LESS THAN INDICATED

45

STORET RETRIEVAL DATE 76/08/04

130409
33 56 37.0 082 31 58.0 3
CLARK HILL RESERVOIR
13181 GEORGIA
031391

11EPALES 2111202
0028 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/26	10 20	0000	28.2		66	50K	8.20	14	0.060	0.300	0.050	0.004
	10 20	0006	28.0	8.2		50K	7.90	13	0.080	0.400	0.050	0.004
	10 20	0015	25.9	6.9		50K	6.90	14	0.070	0.200	0.140	0.004
	10 20	0030	16.3	7.4		50K	6.60	10K	0.070	0.200K	0.250	0.004
	10 20	0046	15.3	7.4		50K	6.50	10K	0.070	0.200	0.240	0.004
73/09/11	15 10	0000	29.4		70	54	8.30	21	0.050	0.600	0.030	0.005
	15 10	0005	29.3	7.4		54	8.10	22	0.040	0.600	0.030	0.016
	15 10	0015	29.1	8.0		54	7.40	24	0.030	0.500	0.030	0.008
	15 10	0025	24.8	6.8		41	6.60	20	0.050	0.400	0.130	0.006
	15 10	0042	22.1	6.2		39	6.10	19	0.090	0.400	0.170	0.005
73/11/12	09 30	0000	15.6		48	36	6.80	17	0.030	0.200K	0.070	0.023
	09 30	0010	15.5	10.4		36	6.80	18	0.030	0.200K	0.070	0.020
	09 30	0025	15.6	9.0		35	6.70	15	0.040	0.200	0.070	0.022
	09 30	0046	14.4	7.6		46	6.60	21	0.080	0.200	0.090	0.028

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/26	10 20	0000	0.019	6.5
	10 20	0006	0.020	
	10 20	0015	0.024	
	10 20	0030	0.022	
	10 20	0046	0.023	
73/09/11	15 10	0000	0.014	8.7
	15 10	0005	0.023	
	15 10	0015	0.018	
	15 10	0025	0.022	
	15 10	0042	0.029	
73/11/12	09 30	0000	0.025	6.0
	09 30	0010	0.020	
	09 30	0025	0.025	
	09 30	0046	0.047	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

130410
33 58 51.0 082 36 33.0 3
CLARK HILL RESERVOIR
13181 GEORGIA
031391

11EPALES 2111202
0042 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/26	10 55	0000	27.8		33	55	8.20	17	0.070	0.300	0.140	0.010
	10 55	0006	27.4	8.7		55	7.60	19	0.070	0.300	0.210	0.005
	10 55	0015	24.4	6.1		58	6.90	19	0.140	0.300	0.310	0.005
	10 55	0026	17.0	4.4		50K	6.50	15	0.230	0.400	0.270	0.005
	10 55	0038	15.7	1.2		60	6.50	20	0.420	0.700	0.210	0.006
73/09/11	16 05	0000	30.0		36	64	8.30	19	0.040	0.700	0.030	0.003
	16 05	0005	29.2	8.0		61	7.70	18	0.030	0.600	0.040	0.003
	16 05	0015	27.9	6.2		63	6.70	21	0.060	0.500	0.180	0.004
	16 05	0025	25.5	0.0		65	6.00	25	0.290	0.900	0.080	0.003
73/11/12	08 45	0000	14.3		48	40	7.70	20	0.030	0.200	0.030	0.052
	08 45	0005	14.3	11.2		40	7.60	21	0.020	0.200K	0.020	0.025
	08 45	0015	14.1	10.0		41	6.80	23	0.040	0.200K	0.070	0.027
	08 45	0032	11.2	10.6		40	7.00	21	0.050	0.200K	0.120	0.022

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/26	10 55	0000	0.034	4.9
	10 55	0006	0.033	
	10 55	0015	0.052	
	10 55	0026	0.048	
	10 55	0038	0.062	
73/09/11	16 05	0000	0.026	6.6
	16 05	0005	0.022	
	16 05	0015	0.032	
	16 05	0025	0.039	
73/11/12	08 45	0000	0.097	11.0
	08 45	0005	0.033	
	08 45	0015	0.040	
	08 45	0032	0.042	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

130411
33 59 34.0 082 34 36.0 3
CLARK HILLS RESERVOIR
13105 GEORGIA

031391

11EPALES 2111202
0043 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/26	14 45	0000	26.9		36	50K	7.70	17	0.100	0.400	0.120	0.004
	14 45	0006	26.4	8.4		50K	7.60	17	0.050	0.300	0.140	0.006
	14 45	0015	21.2	8.0		50K	6.90	12	0.060	0.200K	0.220	0.002
	14 45	0025	16.6	7.8		50K	6.70	13	0.090	0.200K	0.230	0.003
	14 45	0039	15.7	7.4		50K	6.60	12	0.090	0.200K	0.230	0.003
73/09/11	15 35	0000	30.3		60	57	8.30	23	0.040	0.700	0.040	0.005
	15 35	0005	29.7	6.4		54	8.20	22	0.030	0.500	0.030	0.005
	15 35	0015	27.1	7.6		43	7.10	20	0.030	0.600	0.070	0.004
	15 35	0025	25.1	7.6		40	6.50	19	0.040	0.400	0.160	0.004
	15 35	0038	22.3	4.2		41	5.90	12	0.140	0.600	0.160	0.003
73/11/12	09 11	0000	15.1		48	30	6.80	13	0.050	0.200K	0.090	0.033
	09 11	0010	15.1	8.6		31	6.70	15	0.050	0.200K	0.080	0.013
	09 11	0025	14.0	8.8		31	6.60	16	0.060	0.200K	0.100	0.021
	09 11	0040	12.9	7.2		32	6.60	16	0.090	0.200K	0.110	0.022

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/26	14 45	0000	0.034	4.5
	14 45	0006	0.030	
	14 45	0015	0.026	
	14 45	0025	0.029	
	14 45	0039	0.031	
73/09/11	15 35	0000	0.021	9.9
	15 35	0005	0.022	
	15 35	0015	0.019	
	15 35	0025	0.025	
	15 35	0038	0.043	
73/11/12	09 11	0000	0.034	3.2
	09 11	0010	0.022	
	09 11	0025	0.019	
	09 11	0040	0.025	

K VALUE KNOWN TO BE
LESS THAN INDICATED

APPENDIX E

TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 76/08/04

1304A1 45X1A1
33 52 30.0 082 18 30.0 4
HAWE CREEK
13 7.5 PLUM BRANCH
T/CLARK HILL RESVR 031391
BRDG ON RT 44 3.5 NW OF PLUM BRANCH
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/11	09 55		0.110	4.400	0.200	0.015	0.030
73/04/15	08 20		0.024	0.250	0.026	0.008	0.020
73/05/06	08 35		0.073	0.860	0.088	0.005K	0.020
73/06/06	15 30		0.132	2.200	0.800	0.011	0.020
73/07/14	11 15		0.088	0.180	0.019	0.019	0.030
73/07/24	12 50		0.058	0.310	0.026	0.019	0.045
73/09/08	13 30		0.023	0.280	0.022	0.008	0.035
73/10/14	10 30		0.010K	0.200	0.040	0.011	0.025
73/11/10	14 15		0.014	1.250	0.040	0.009	0.030
73/12/09	14 00		0.020	0.200	0.005K	0.016	0.020
74/01/12	11 55		0.136	0.300	0.015	0.025	0.045
74/01/26	12 00		0.048	0.200	0.010		0.055
74/02/09	11 15		0.128	0.200	0.025	0.020	0.040
74/02/23	12 05		0.068	0.300	0.020	0.020	0.045

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

130481 45X181
34 00 00.0 082 21 00.0 4
LONG CANE CREEK
13 7.5 VERDERY
T/CLARK HILL RESVR 031391
BRADLEY BRDG ON RT 117 4 MINW OF TROY
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/10	12	13	0.180	0.800	0.138	0.030	0.100
73/04/08	08	22	0.105	1.320	0.280	0.048	0.185
73/05/10	11	00	0.357	1.000	0.088	0.052	0.135
73/06/04	14	10	0.315	0.310	0.084	0.044	0.100
73/07/06	14	20	0.294	0.520	0.039	0.060	0.115
73/08/17	07	25	0.400	0.170	0.017	0.150	0.200
73/10/02	10	10	0.018	0.800	0.075	0.073	0.250
73/12/03	15	25	0.192	0.300	0.032	0.116	0.180
74/01/11	14	40	0.224	0.300	0.030	0.055	0.120
74/01/26	11	20	0.128	0.250	0.025	0.050	0.115
74/02/08	14	25	0.176	0.100	0.040	0.035	0.085
74/02/22	11	10	0.168	0.300	0.025	0.030	0.095

15

STORET RETRIEVAL DATE 76/08/04

1304C1 45X1C1
33 59 00.0 082 22 00.0 4
BOLD BRANCH
13 7.5 WILLINGTON
T/CLARK HILL RESVR 031391
RT 216 BRDG .75 MI S WILKS CEMETARY
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/10	11 32		0.096	2.100	0.037	0.011	0.015
73/04/08	09 44		0.058	0.900	0.199	0.013	0.035
73/05/10	11 45		0.140	0.350	0.085	0.010	0.020
73/06/04	13 45		0.170	0.300	0.170	0.016	0.020
73/07/06	14 00		0.147	0.100K	0.021	0.016	0.020
73/08/17	07 05		0.154	0.110	0.028	0.042	0.042
73/10/02	09 50		0.010K	0.600	0.027	0.019	0.030
73/12/03	15 15		0.032	0.200	0.020	0.012	0.040
74/01/11	14 10		0.124	0.100	0.020	0.020	0.020
74/01/25	11 00		0.100	0.100K	0.010	0.020	0.025
74/02/08	14 10		0.148	0.100K	0.015	0.015	0.015
74/02/22	10 50		0.148	0.100K	0.010	0.010	0.015

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

130401 45x101
33 59 00.0 082 26 30.0 4
LITTLE RIVER
13 7.5 CALHOUN CK
T/CLARK HILL RESVR 031391
RT 39 BRDG NE OF WILLINGTON
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/10	11 01		0.198	1.540	0.052	0.018	0.055
73/04/08	07 45		0.140	1.320	0.260	0.064	0.210
73/05/10	10 31		0.240	0.440	0.132	0.017	0.055
73/06/04	13 27		0.168	0.540	0.040	0.022	0.080
73/07/06	13 40		0.180	0.520	0.024	0.031	0.115
73/08/17	06 50		0.072	0.230	0.022	0.036	0.075
73/10/02	09 30		0.039	0.620	0.140	0.039	0.135
73/12/03	15 00		0.068	0.200	0.024	0.024	0.065
74/01/11	13 50		0.252	0.400	0.015	0.025	0.060
74/01/25	10 45		0.168	0.100	0.010	0.030	0.080
74/02/08	13 55		0.208	0.200	0.055	0.020	0.060
74/02/22	10 35		0.224	0.200	0.020	0.020	0.070

53

STORET RETRIEVAL DATE 76/08/04

13045I 45A1E1
34 04 00.0 082 38 30.0 4
SAVANNAH RIVER
13 7.5 HEARUMONT GA
I/CLARK HILL RESVR 031391
RT 72 BRDG 3 MI SW OF CALHOUN FALLS SC
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/10	10 13		0.200	2.300	0.044	0.004	0.015
73/04/08	09 50		0.220	0.780	0.189	0.035	0.165
73/05/10	11 55		0.200	0.760	0.176	0.005K	0.010
73/06/04	15 00		0.273	0.230	0.026	0.026	0.050
73/07/06	15 10		0.220	0.305	0.030	0.011	0.015
73/08/17	08 00		0.273	0.140	0.008	0.030	0.045
73/10/02	10 45		0.060	0.380	0.072	0.009	0.040
73/10/14	11 15		0.026	0.200	0.042	0.009	0.025
73/12/03	14 30		0.154	0.200	0.012	0.008	0.040
74/01/11	15 45		0.216	0.100	0.015	0.010	0.025
74/01/25	12 10		0.168	0.200	0.010	0.010	0.035
74/02/08	13 20		0.184	0.100K	0.015	0.005	0.015
74/02/22	12 05		0.192	0.200	0.020	0.005K	0.020

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

1304E2 1304E2
33 39 30.0 082 12 00.0 4
SAVANNAH RIVER
13 7.5 CLARKS HILL
0/CLARK HILL RESVR 031391
TURBINE DISCH E END CLARK HILL DAM
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/10	09 40		0.231	3.180	0.120	0.011	0.025
73/04/15	06 45		0.210	1.540	0.050	0.012	0.040
73/05/18	12 10		0.230	0.280	0.022	0.012	0.030
73/06/24	09 30		0.220	0.110	0.026	0.008	0.025
73/07/15	08 27		0.220	0.230	0.010	0.006	0.015
73/08/12	08 10		0.240	1.470	0.260	0.025	0.030
73/09/09	09 30		0.200	0.350	0.017	0.006	0.010
73/10/14	08 45		0.220	0.550	0.031	0.006	0.010
73/11/12	09 50		0.084	0.200	0.038	0.005K	0.005K
73/12/08	09 30		0.132	0.400	0.008	0.005K	0.030
74/01/13	09 05		0.160	0.200	0.020	0.005K	0.015
74/01/27	11 50		0.136	0.150	0.020	0.010	0.020
74/02/21	10 15		0.168	0.200	0.030	0.005	0.015
74/03/10	13 35		0.208	0.700	0.015	0.005K	0.020

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

1304F1 1304F1
33 55 00.0 082 37 00.0 4
NEWFORD CREEK
13 7.5 CHENNAULT
T/CLARK HILL RESVR 031391
200 FT UPSTREAM OF RD BRDG 1 SW CHENNAUL
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/11	09	13	0.189	5.400	0.168	0.005K	0.025
73/04/15	09	40	0.054	0.990	0.058	0.008	0.020
73/05/06	09	55	0.066	0.980	0.096	0.006	0.020
73/06/02	13	45	0.042	0.370	0.032	0.008	0.025
73/07/14	11	15	0.038	0.140	0.012	0.006	0.015
73/07/24	12	20	0.078	0.400	0.044	0.022	0.050
73/09/08	11	30	0.023	0.310	0.063	0.009	0.025
73/11/10	14	50	0.020	0.450	0.026	0.008	0.020
73/12/09	14	40	0.040	0.200	0.005K	0.012	0.015
74/01/12	12	30	0.140	0.600	0.015	0.010	0.020
74/01/26	11	25	0.144	0.600	0.020	0.010	0.025
74/02/09	12	00	0.184	0.100	0.015	0.015	0.035
74/02/23	10	00	0.184	0.600	0.020	0.015	0.040

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

130461 130461
33 58 30.0 082 46 30.0 4
BROAD RIVER
13 WILKES CO HWY MA
T/CLARK HILL RESVR 031391
GA RT 17 BRDG
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/10	13	56	0.260	1.470	0.066	0.012	0.090
73/04/15	10	25	0.210	1.100	0.198	0.044	0.188
73/05/10	12	50	0.260	1.800	0.730	0.012	0.090
73/06/04	15	45	0.315	0.840	0.120	0.019	0.075
73/07/06	11	00	0.290	0.190	0.013	0.011	0.045
73/08/17	12	30	0.252	0.170	0.025	0.009	0.095
73/10/07	13	35	0.294	1.000	0.290	0.020	0.200
73/12/03	13	45	0.224	0.100	0.020	0.012	0.055
74/01/12	11	10	0.340	0.100	0.010	0.010	0.060
74/01/25	13	50	0.264	0.200	0.010	0.015	0.080
74/02/08	15	45	0.280	0.150	0.015	0.010	0.040
74/02/22	13	40	0.288	0.300	0.015	0.010	0.055

59

STORET RETRIEVAL DATE 76/08/04

130441 1304M1
33 50 30.0 0H2 35 00.0 4
FISHING CREEK
13 7.5 METASVILLE
T/CLARK HILL RESVR 031391
BRDG 2 MI UPSTREAM FROM MOUTH OF CREEK
11EPALES 211120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/11	12	16	0.094	3.300	0.126	0.024	0.030
73/04/15	10	50	0.048	0.480	0.048	0.010	0.045
73/05/06	10	30	0.094	1.600	0.060	0.006	0.030
73/06/02	16	45	0.063	0.480	0.075	0.005K	0.015
73/07/06	12	15	0.105	0.240	0.015	0.010	0.020
73/07/24	11	30	0.052	0.520	0.040	0.019	0.105
73/09/12	10	50	0.092	0.330	0.024	0.008	0.025
73/10/14	11	45	0.035	0.400	0.027	0.007	0.025
73/11/10	15	20	0.010K	1.400	0.031	0.006	0.035
73/12/09	15	00	0.028	0.300	0.044	0.012	0.020
74/01/12	13	08	0.100	0.200	0.015	0.010	0.025
74/01/26	10	30	0.068	0.900	0.025	0.015	0.035
74/02/09	12	25	0.100	0.300	0.020	0.020	0.065
74/02/23	10	55	0.092	0.500	0.030	0.020	0.070

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

1304J1 1304J1
33 49 00.0 082 22 30.0 4
SOAP CREEK
13 7.5 LINCOLNTON
T/CLARK HILL RESVR 031391
AYCOCK FARM RD BRDG 2 MI NW LINCOLNTON
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/11	11	12	0.044	4.700	0.168	0.013	0.025
73/04/15	09	20	0.019	0.750	0.078	0.008	0.025
73/05/06	09	20	0.050	0.930	0.034	0.005K	0.020
73/06/02	14	20	0.067	1.050	0.110	0.010	0.035
73/07/06	10	25	0.050	0.210	0.027	0.010	0.020
73/07/24	13	30	0.092	0.360	0.028	0.025	0.055
73/09/08	12	30	0.046	0.290	0.046	0.016	0.040
73/10/14	09	40	0.033	0.200	0.046	0.009	0.015
73/11/10	13	35	0.010K	0.300	0.028	0.006	0.035
73/12/09	13	15	0.010K	0.300	0.020	0.008	0.010
74/01/12	11	10	0.036	0.395	0.020		0.025
74/01/26	12	40	0.020	1.000	0.040	0.015	0.030
74/02/09	10	00	0.052	0.200	0.020	0.015	0.040
74/02/23	13	00	0.040	0.200	0.020	0.015	0.035

K VALUE KNOWN TO BE
LESS THAN INDICATED

59

STORET RETRIEVAL DATE 76/08/04

1304K1 1304K1
33 47 30.0 082 26 30.0 4
DRY FORK CREEK
13 7.5 LINCOLNTON
T/CLARK HILL RESVR 031391
GA RT 47 BRDG 1.5 MI SE OF LINCOLNTON
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/11	10 14		0.086	6.700	0.176	0.013	0.025
73/04/15	08 38		0.039	0.720	0.039	0.008	0.025
73/05/06	09 05		0.110	0.630	0.230	0.008	0.030
73/06/02			0.154	0.980	0.370	0.015	0.025
73/07/06	10 40		0.054	0.840	0.019	0.009	0.030
73/07/24	12 50		0.420	0.480	0.330	0.026	0.052
73/09/08	13 00		0.010K	0.440	0.044	0.007	0.030
73/10/14	10 50		0.024	0.350	0.022	0.007	0.011
73/11/10	13 50		0.014	2.100	0.050	0.064	0.075
73/12/09	13 30		0.010K	0.500	0.005K	0.016	0.065
74/01/12	11 30		0.120	0.800	0.030	0.015	0.035
74/01/26	12 25		0.080	0.200	0.020	0.020	0.030
74/02/09	10 45		0.092	0.400	0.025	0.015	0.040
74/02/23	12 35		0.092	0.200	0.015	0.015	0.035

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

1304L1 1304L1
33 34 00.0 082 26 00.0 4
GERMANY CREEK
13 MCDUFFIE CO MAP
T/CLARK HILL RESVR 031391
FARR-JONES RD BRDG NE OF THOMSON
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/11	10 20		0.090	0.690	0.231	0.012	0.035
73/04/15	07 30		0.080	0.580	0.147	0.021	0.065
73/05/18	11 30		0.120	0.520	0.052	0.011	0.045
73/06/24	10 00		0.160	0.370	0.065	0.017	0.050
73/07/15	09 05		0.176	0.460	0.037	0.015	0.040
73/08/12	09 00		0.160	0.180	0.036	0.011	0.055
73/09/09	10 15		0.147	0.760	0.058	0.024	0.045
73/10/14	09 30		0.100	0.600	0.038	0.014	0.035
73/11/12	10 30		0.010K	0.250	0.015	0.015	0.030
73/12/08	10 00		0.060	0.500	0.032	0.012	0.050
74/01/13	09 45		0.104	0.200	0.060	0.015	0.045
74/01/27	11 15		0.048	0.400	0.080	0.015	0.050
74/02/21	10 50		0.088	0.400	0.080	0.015	0.050
74/03/10	14 05		0.084	0.400	0.030	0.015	0.040

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

1304M1 1304M1
33 32 30.0 082 32 00.0 4
MATTOX CREEK
13 MCDUFFIE CO MAP
T/CLARK HILL RESVR 031391
OLD WRIGHTSBORO AUGUSTA RD N OF THOMSON
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/11	10	40	0.210	2.300	0.189	0.027	0.065
73/04/15	09	35	0.147	0.500	0.075	0.020	0.045
73/05/18	10	18	0.330	0.210	0.022	0.022	0.040
73/06/24	11	15	0.154	0.480	0.038	0.032	0.065
73/07/15	10	15	0.230	0.610	0.024	0.023	0.080
73/08/12	09	55	0.290	0.210	0.040	0.020	0.050
73/09/09	11	20	0.230	0.150	0.038	0.024	0.050
73/10/14	10	35	0.170	0.650	0.035	0.018	0.100
73/11/12	11	25	0.013	0.150	0.016	0.008	0.015
73/12/08	11	00	0.040	0.200	0.012	0.020	0.050
74/01/13	10	50	0.092	0.100K	0.020	0.025	0.055
74/01/27	09	55	0.140	0.200	0.025	0.030	0.055
74/02/21	11	45	0.140	0.300	0.070	0.020	0.045
74/03/10	13	50	0.136	0.400	0.025	0.005K	0.035

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

1304N1 1304N1
33 33 00.0 082 34 00.0 4
MIDDLE CREEK
13 4COUFFIE CO MAP
T/CLARK HILL RESVR 031391
THOMSON WASHINTON RD BRDG N OF THOMSON
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/11	10 55		0.110	1.080	0.044	0.015	0.095
73/04/15	09 25		0.180	0.690	0.132	0.011	0.045
73/05/18	10 29		0.132	0.220	0.053	0.012	0.040
73/06/24	11 00		0.105	0.230	0.056	0.008	0.025
73/07/07	10 05		0.120	0.220	0.044	0.007	0.015
73/08/12	09 45		0.150	0.200	0.059	0.008	0.020
73/09/09	11 10		0.110	0.160	0.046	0.010	0.020
73/10/14	10 15		0.029	0.250	0.019	0.013	0.030
73/11/12	11 35		0.028	0.300	0.015	0.019	0.050
73/12/08	10 50		0.040	0.400	0.024	0.008	0.030
74/01/13	10 35		0.192	0.100	0.065	0.010	0.030
74/01/27	10 05		0.252	0.300	0.090	0.015	0.075
74/02/21	11 35		0.232	0.300	0.030	0.015	0.190
74/03/10	14 55		0.024	0.500	0.010	0.015	0.035

STORET RETRIEVAL DATE 76/08/04

1304P1 1304P1
33 33 40.0 082 35 45.0 4
HART CREEK
13 MCDUFFIE CO MAP
T/CLARK HILL RESVR 031391
OLD WASHINGTON-THOMPSON RD BRDG
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/11	13	10	0.066	2.730	0.126	0.009	0.030
73/04/15	09	10	0.074	2.310	0.076	0.010	0.030
73/05/18	10	40	0.130	0.230	0.025	0.010	0.020
73/06/24	10	45	0.150	0.240	0.040	0.012	0.025
73/07/15	09	50	0.126	0.280	0.010	0.013	0.025
73/08/12	09	40	0.138	0.100K	0.023	0.012	0.030
73/09/09	11	00	0.072	0.140	0.060	0.013	0.030
73/10/14	10	30	0.091	0.250	0.056	0.022	0.025
73/11/12	11	15	0.010K	0.250	0.011	0.017	0.025
73/12/08	10	45	0.010K	0.200	0.008	0.012	0.025
74/01/13	10	25	0.028	0.200	0.020	0.010	0.030
74/01/27	10	15	0.084	0.300	0.040	0.015	0.035
74/02/21	11	30	0.096	0.200	0.030	0.010	0.030
74/03/10	14	44	0.024	0.200	0.010	0.005	0.020

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/08/04

130401 130401
33 38 30.0 082 35 30.0 4
LITTLE RIVER
13 MCDUFFIE CO MAP
T/CLARK HILL RESVR 031391
TOM WATSON BRDG US 78 SE OF WASHINGTON
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/11	12 50		0.088	1.260	0.066	0.023	0.070
73/04/15	08 45		0.082	1.150	0.032	0.042	0.085
73/05/18	11 02		0.198	0.290	0.038	0.168	0.210
73/06/24	10 30		0.280	1.200	0.068	0.090	0.150
73/07/15	09 30		0.260	0.630	0.040	0.105	0.222
73/08/12	09 20		0.030	0.460	0.007	0.019	0.065
73/09/09	10 35		0.010K	0.400	0.023	0.010	0.065
73/10/14	10 00		0.011	0.800	0.023	0.018	0.080
73/11/12	10 55		0.010K	0.250	0.015	0.115	0.150
73/12/08	10 25		0.044	0.400	0.040	0.100	0.150
74/01/13	10 05		0.124	0.200	0.015	0.045	0.100
74/01/27	10 45		0.096	0.200	0.020	0.045	0.105
74/02/21	11 10		0.112	0.400	0.045	0.030	0.070
74/03/10	14 30		0.048	0.200	0.010	0.030	0.070

K VALUE KNOWN TO BE
LESS THAN INDICATED

-52-

STORET RETRIEVAL DATE 76/08/04

13048A TF13048A P006000
34 10 50.0 082 18 30.0 4
ABBEVILLE
13 7.5 ABBEVILLE
T/CLARK HILL RESERVOIR 031391
LONG CANE CREEK
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/31 07 00 CP(T)- 73/05/31 17 00			0.690	7.000	3.200	2.600	3.300	0.968	0.713
73/06/30 07 00 CP(T)- 73/06/30 17 00			0.650	7.390	3.300	4.000	4.900	0.794	0.808
73/07/31 07 00 CP(T)- 73/07/31 17 00			2.200	13.000	4.500	4.800	6.400	0.661	0.600
73/08/31 07 00 CP(T)- 73/08/31 17 00			5.040	10.000	6.900	6.100	7.000	0.468	0.532
73/09/30 07 00 CP(T)- 73/09/30 17 00			1.150	6.400	2.900	2.200	2.600	0.819	0.491
73/10/31 07 00 CP(T)- 73/10/31 17 00			1.600	12.500	5.800	4.200	4.900	0.569	0.334
73/11/30 07 00 CP(T)- 73/11/30 17 00			1.600	8.200	0.230	0.230	5.200	0.590	0.553
73/12/31 07 00 CP(T)- 73/12/31 17 00			0.720	9.900	3.120	1.920	3.000	0.540	0.534
74/02/01 07 00 CP(T)- 74/02/01 17 00			0.040	6.250	0.059	2.320	2.900	1.200	0.983
74/03/01 07 00 CP(T)- 74/03/01 17 00			1.120	6.000	3.400	2.500	3.000	0.654	1.040
74/04/01 07 00 CP(T)- 74/04/01 17 00			1.000	3.800	2.900	2.700	3.200	0.874	0.771
74/05/01 07 00 CP(T)- 74/05/01 17 00			1.600	13.000	6.600	4.200	5.450	0.636	0.868

STORET RETRIEVAL DATE 76/08/04

1304XA TF1304XA P001000
34 18 55.0 082 23 35.0 4
DUE WEST
13 ABBEVILLE CO MAP
T/CLARK HILL RESERVOIR 031392
PARK CREEK/LITTLE RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/12/06	14	00	2.200	24.000	9.000	7.900	12.000		
74/01/02	09	00	2.640	5.700	1.440	1.080	1.350	0.045	0.045
74/01/24	09	30	1.440	25.000	4.100	2.900	3.900		
74/02/27	12	00	0.560	14.000	5.400	3.000	4.100	0.045	0.045
74/03/28	10	20	0.720	12.000	8.400	4.600	6.800	0.045	0.045
74/05/03	09	00				3.750	9.000	0.045	0.045
74/05/31	09	30	2.160	8.000	3.300	1.800	2.100	0.045	0.045
74/09/27	15	00	1.000	21.000	6.100	6.500	10.000	0.045	0.045
74/10/31	09	30	1.280	26.000	10.000	4.300	5.900	0.045	0.045
74/11/29	09	10	1.920	20.000	8.400	3.500	6.900	0.045	0.045
74/12/20	13	20	2.160	14.000	6.100	4.200	7.530	0.045	0.045
75/01/27	13	15	1.200	21.000	5.400	5.700	6.000	0.045	0.045

STORET RETRIEVAL DATE 76/08/04

1304YA P01304YA
34 05 10.0 082 35 35.0 4
CALHOUN FALLS
13 7.5 CALHOUN FALS
T/CLARK HILL RESERVOIR 031391
SAWNEY CREEK
11EPALES 21+1204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/22	16	15	0.048	8.700	0.920	5.070	6.100	0.250	
73/08/01	09	30	0.080	6.500	0.300	3.990	5.300	0.252	0.367
73/09/28	15	00	0.100	18.000	1.500	6.700	8.100	0.300	0.300
73/12/13	10	00	0.390	10.200	0.580	6.400	6.800	0.350	0.275
74/01/14	11	00	0.440	13.000	1.480	5.880	5.900	0.300	
74/02/11	11	00						0.250	0.250
74/03/11			0.280	6.900	0.480	4.000	5.300	0.200	0.300
74/04/23	09	00	0.120	12.000	1.050	4.600	6.400	0.250	0.200
74/07/22	09	00	0.094	15.000	0.860	6.800	8.800	0.500	0.500

STORET RETRIEVAL DATE 76/04/27

450531 AS450531 P003469
34 25 40.0 083 06 00.0 4
LAVONIA (GEORGIA)
4S 7.5 LAVONIA
T/CLARK HILL RESERVOIR 031391
UNAWATTI CREEK
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/16	08 30		0.014	19.000	8.900	7.800	9.300	0.150	0.300
73/06/21			3.400	14.700	8.800	8.200	9.100	0.300	0.300
73/08/08	17 30		3.600	10.500	3.570	8.700	9.600	0.300	0.300
73/09/12			5.000	8.000	3.800	10.400	10.600	0.300	0.300
73/10/25	08 00		8.000	10.500	5.050	14.700	14.700	0.300	0.300
73/12/10	17 00		1.600	12.500	6.100	8.100	9.450	0.300	0.300
74/01/16	18 00		0.640	8.600	5.100	4.500	4.700	0.300	0.300
74/02/05	17 00		0.800	13.000	0.340	6.000	6.700	0.300	0.300
74/03/20	17 00		0.560	13.250	9.300	9.800	9.800	0.300	0.300
74/05/28			2.350	16.000	7.850	5.500	7.000	0.300	0.300
74/07/07			2.520	5.000	2.700	4.000	4.300	0.300	0.300
74/09/06				11.000	6.200	7.500	7.900	0.300	0.300